ABSTRACT OF THE DISCLOSURE

By directly distributing liquid material into upright cylindrical tubes, such liquid material for foodstuffs, medicaments, etc. is kept in its state of being isolated from external atmosphere so as to be perfectly sterilized. That is to say, while simply and adequately securing the controlled cooling of the tube, by means of the heat medium which circulates within the jacket, the liquid material supplied into the tube is caused to freeze with uniform thickness onto the inner wall surface of the tube, with further possibility of uniform heating of the freeze-dried layer.

The main body part of this freeze-drying apparatus is assembled with upright cylindrical tubes for freezing liquid material onto the inner wall surface of the tube and jackets to surround the outer periphery of each of the tubes surrounding the tubes in a substantially concentric outer cylindrical shape, within which to circulate the heat medium; then, on the upper end side of these tubes in this main body part, there is connected a duct which communicates to the vacuum exhaust system; while, on the lower end side of the tubes, there is connected a recovery chamber provided with an opening-and-closing valve, or equipped with a valve on the bottom part thereof; and, on the upper part of the lower part of the tube, there is defined an inlet port, through which the liquid material is fed into the inner cavity of the tube, the inlet port being formed contiguous to the downstream side of the tube-passageway for feeding the liquid material.